

**BEFORE THE STATE CORPORATION COMMISSION  
OF THE STATE OF KANSAS**

Recommendation to Open Miscellaneous )  
Investigation into the Use of a Laser Absorption )  
Spectroscopy Platform Coupled with Data ) Docket No. 22-GIMG-405-MIS  
Analysis Software as an Approved Method to )  
Perform Natural Gas Leak Surveys as Required )  
by K.A.R. 82-11-4(b)(32).

**PETITION OF COMMISSION STAFF FOR  
ORDER INITIATING INVESTIGATION**

The Staff of the State Corporation Commission of the State of Kansas (Staff and Commission, respectively) hereby petitions the Commission for an order initiating a Miscellaneous Investigation into the challenges the Picarro surveying methodology, and other similar technologies present to pipeline safety regulations with respect to leak evaluation pursuant to K.A.R. 82-1-214. Opening a Miscellaneous Investigation will allow jurisdictional natural gas operators and other interested parties to participate in providing feedback to advise and inform Staff in the drafting of a proposed guidance document to be approved by the Commission pursuant to K.S.A. 77-438.

1. On December 14, 2021, Kansas Gas Service, a Division of ONE Gas, Inc. (KGS) requested a guidance document from Commission Staff on the interpretation of K.A.R. 82-11-4(b)(32)(d) pursuant to K.S.A. 77-438.<sup>1</sup> Specifically, KGS seeks guidance on the use and implementation of an advanced technology for performing leak surveys.<sup>2</sup> KGS is concerned about the applicability of the Kansas regulatory requirement to evaluate all leaks within two hours of

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<sup>1</sup> Letter from Robert Vincent, Managing Attorney, KGS, to Terri Pemberton, Chief Litigation Counsel, Kansas Corporation Commission (Dec. 14, 2021) (on file with Commission Litigation Staff) (requesting Guidance Document from Commission concerning Picarro surveying methodology).

<sup>2</sup> *Id.*

notification because the technology may provide indications of multiple leaks over a widespread area in a single report.<sup>3</sup>

2. According to KGS, Picarro's survey methodology utilizes an advanced methane detection unit mounted on a vehicle to assist natural gas companies leak detection efforts.<sup>4</sup> In conjunction with advanced software, Picarro's methane detection unit captures and analyzes air samples.<sup>5</sup> These features permit Picarro's leak surveys to cover large areas more quickly than existing methods.<sup>6</sup> After sampling and analysis, Picarro software generates a report that more often than not includes multiple leaks.<sup>7</sup>

3. KGS further noted, that the nature of Picarro's sampling, analysis, and reporting process presents potential conflicts with K.A.R. 82-11-4(b)(32)(d).<sup>8</sup> K.A.R. 82-11-4(b)(32)(d) requires natural gas companies to "inspect and classify all reports of gas leaks within two hours of notification." A Picarro report would likely constitute notification under K.A.R. 82-11-4(b)(32)(d) requiring Companies to inspect and classify within two hours. Because Picarro reports may identify multiple leaks over a large geographic area, and because Picarro reports constitute notification under K.A.R. 82-11-4(b)(32)(d), Companies may have difficulty inspecting and classifying all reported gas leaks from a Picarro report within two hours. A natural gas company's failure to inspect and classify all reported gas leaks within two hours would violate K.A.R. 82-11-4(b)(32)(d).<sup>9</sup>

4. Staff has been in communication with KGS and other natural gas operators with respect to the use of the Picarro technology. Staff recognizes the safety value this technology

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<sup>3</sup> *Id.*

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

<sup>9</sup> *See generally id.*

could offer jurisdictional natural gas companies in performing more frequent—and possibly more accurate—leak surveys of natural gas piping,<sup>10</sup> and has reduced to writing its understanding of the technology, and potential changes to Commission regulations to accommodate the use of such technology. Staff’s analysis and recommendations are contained in the Report and Recommendation (R&R) attached hereto as **Attachment A**, and incorporated herein by reference.

5. In its R&R, Staff recognizes that K.S.A. 77-438 permits state agencies to issue a guidance document explaining the agency’s approach to, or interpretation of, a law or policy. K.S.A. 77-438 also permits the Commission to issue a guidance document without following the procedures for the adoption of administrative rules and regulations.<sup>11</sup>

6. Staff also notes that Kansas regulations require an operator to use a leak survey technology that has been approved by KCC Staff.<sup>12</sup> In review of the Picarro survey methodology, Staff identified four challenges presented by incorporating Picarro into the pipeline safety regulatory regime: 1) Picarro’s accuracy; 2) implementing Picarro-specific procedures; 3) determining the start of K.A.R. 82-11-4(b)(32)(d)’s two hour requirement; and 4) reaffirming the two hour requirement for investigating leaks.<sup>13</sup>

7. Furthermore, these challenges may have unintended consequences on other natural gas operators’ leak survey program.<sup>14</sup> Staff’s awareness of the consequences on other natural gas operator’s leak survey programs and related concerns will permit Staff to better advise the

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<sup>10</sup> *Id.* at 2.

<sup>11</sup> Such a guidance document may contain binding instructions to state agency staff members; however, a guidance document issued pursuant to K.S.A. 77-438 lacks the force of law.

<sup>12</sup> See K.A.R. 82-11-1(m) (“‘Leak detection equipment’ means a device, including a flame ionization unit, combustible gas indicator, and other equipment *as approved by the gas pipeline safety section*, that measures the amount of hydrocarbon gas in an ambient air sample.” (emphasis added)).

<sup>13</sup> R&R at 4.

<sup>14</sup> *Id.*

Commission on the appropriateness of a guidance document related to the Picarro survey methodology, and other similar technologies.<sup>15</sup>

8. Additionally, Staff believes Commission guidance will provide natural gas operators with a measure of certainty before making significant changes to their leak survey program due to the potential conflicts between use of the Picarro survey methodology and Kansas regulations.<sup>16</sup>

9. Therefore, Staff recommends opening a Miscellaneous Investigation into the matter to allow the Commission and all jurisdictional natural gas operators and interested parties an opportunity to provide feedback in crafting guidance regarding the appropriateness of using the Picarro survey methodology, and similar technologies, to meet pipeline safety leak survey and leak response regulatory requirements.

10. Additionally, Staff recommends the Miscellaneous Investigation require all jurisdictional entities and interested parties to address the four challenges described in paragraph seven (7) above and addressed in greater detail in Staff's R&R; any other potential challenges; and the appropriateness of a guidance document.

11. Staff also recommends the Commission establish a procedural schedule as set forth below:

| <b><u>Event</u></b>                    | <b><u>Time</u></b>             |
|--|--------------------------------|
| Entry of Appearance & Written Comments | 30 days from Order date        |
| Reply Comments                         | 30 days after Written Comments |

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<sup>15</sup> *Id.* at 2.

<sup>16</sup> *Id.*

|                                 |                              |
|---------------------------------|------------------------------|
| Staff Report and Recommendation | 30 days after Reply Comments |
|---------------------------------|------------------------------|

WHEREFORE, Staff respectfully requests the Commission grant this petition, thereby initiating an investigation, including the prescribed procedure schedule, as set forth above, and for any other such relief the Commission deems just and reasonable.

Respectfully submitted,

*/s/ Jared R. Jevons*

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## **ATTACHMENT “A”**

REPORT AND RECOMMENDATION  
UTILITIES DIVISION

TO: Chair Dwight D. Keen  
Commissioner Susan K. Duffy  
Commissioner Andrew J. French

FROM: Leo Haynos, Chief Engineer

DATE: February 7, 2022

SUBJECT: Recommendation to Open Miscellaneous Investigation into the Use of a Laser Absorption Spectroscopy Platform Coupled with Data Analysis Software as an Approved Method to Perform Natural Gas Leak Surveys as Required by K.A.R. 82-11-4(b)(32).

**EXECUTIVE SUMMARY:**

On December 14, 2021, Kansas Gas Service, a Division of ONE Gas, Inc. (KGS) requested the Commission issue a guidance document (see attached) on the interpretation of K.A.R. 82-11-4(b)(32)(d) pursuant to K.S.A. 77-438.<sup>1</sup> This Kansas regulation requires a natural gas pipeline operator to inspect and classify all reports of gas leaks within two hours of notification. In Staff's opinion, the purpose of the regulation is to require an operator to evaluate the extent and safety threat of a known gas leak within two hours of receiving notice.

After discussing the context of this request with KGS, it became clear to Staff that KGS is seeking guidance on the use and implementation of an advanced technology for performing leak surveys. The technology allows the operator to survey large areas of gas infrastructure within a few hours. Because the technology may provide indications of multiple leaks over a widespread area in a single report, KGS is concerned about the applicability of the Kansas regulatory requirement to evaluate all leaks within two hours of notification. Rather than rely on Staff's interpretation of the applicability of this regulation, KGS has requested the Commission provide guidance in its official capacity as the state agency with oversight of pipeline safety regulations. Because the method of operator response to a known gas leak can have significant safety repercussions to the public and potential civil liability risks to the operator, and because other natural gas operators may be interested in the use of this technology Staff agrees with KGS that this topic should be fully vetted with the Commission.

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<sup>1</sup> K.S.A. 77-438 allows a state agency to issue a guidance document that explains the agency's current approach to, or interpretation of, a law or policy. K.S.A. 77-438 permits the Commission to issue a guidance document without following the procedures for the adoption of administrative rules and regulations. Such a guidance document may contain binding instructions to state agency staff members; however, a guidance document issued pursuant to K.S.A. 77-438 lacks the force of law.

The above described gas emissions survey technology has not been used to meet regulatory requirements for leak surveys in Kansas. However, Staff recognizes the potential safety value this technology could offer Kansas in performing more frequent – and possibly more accurate – leak surveys of natural gas piping. Therefore, Staff recommends opening a Miscellaneous Investigation into this matter that will allow the Commission to receive feedback from jurisdictional natural gas operators and interested parties regarding the appropriateness of a guidance document supporting the use of this technology to meet pipeline safety leak survey and leak response regulatory requirements.

## **BACKGROUND:**

Within the last ten years, the natural gas industry has developed a technology using an ambient air sampling system that is capable of detecting natural gas in the atmosphere at very minute levels. Once gas is detected, the data is integrated with an advanced analytics platform that corrects for atmospheric conditions to provide a potential leak risk ranking for all detected methane emissions. This process allows the surveyor to sample a large area and provide a report showing the possible locations of any methane emissions. One of the equipment manufacturers, Picarro Inc. (Picarro)<sup>2</sup> offers the following description of the process:

The system collects, processes, and displays information in real-time. Hazardous leak plumes have unique signatures we can measure, allowing Picarro analytics to rank indications by potential risk.... The core technology is a methane analyzer based on Cavity Ring Down Spectroscopy (CRDS) enhanced for ethane detection. [As the vehicle drives through a natural gas plume, samples are collected through the line of inlets located on the front of the vehicle and measured in real time. Wind sensors simultaneously calculate the wind speed and direction from which a gas plume profile is derived. Emissions rate and location are determined through the combination of multiple transects downwind of a leak.] The analyzer simultaneously measures five gas molecules to reduce false positive indications. Peripheral equipment provides 4G mobile data connectivity, measures GPS position and tracks atmospheric conditions.... Enhanced Picarro CRDS lasers are able to accurately distinguish – at driving speeds – between natural gas leaks, vehicle exhaust, and other sources of biogenic methane such as those from sewers and landfills, thereby reducing false-positive indications during natural gas leak survey.... Advanced risk ranking analytics combines multiple data collection runs to prioritize indications by risk, allowing users to prioritize indications that are most likely to be hazardous....<sup>3</sup>

The Natural Gas Pipeline Safety Act<sup>4</sup> allows state governments to establish primacy over safety of intrastate natural gas pipelines provided the participating states adopt regulations promulgated by the U.S. Department of Transportation. Since 1970, the KCC has been the state agency with safety oversight authority of intrastate natural gas pipelines and has adopted the applicable federal

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<sup>2</sup> Staff notes there are several manufacturers of equipment that use a similar approach to the Picarro system. For this Report Staff relied on information on Picarro provided by KGS in its letter to Staff on Dec. 14, 2021.

<sup>3</sup> Picarro Surveyor and P-Cubed User Manual, Version 6.1, p. 16.

<sup>4</sup> 49 U.S.C.A. § 60101 *et seq.*



regulations.<sup>5</sup> Over many years, the Commission has modified the adopted federal regulations to provide clarity to a federal regulation or to promulgate regulations more stringent than the federal equivalent. Regarding the requirements for leak surveys of distribution natural gas pipelines, the Commission has made extensive changes to the federal regulation in order to provide specificity toward determining the risk a leak presents and minimum response requirements based on a given leak category. Table 1 provides a comparison of federal and Kansas leak survey/response requirements.

As noted in Table 1, federal regulations require an operator to perform a leak survey at least once every 15 months in a business district and at least once every five years outside of business districts, with the caveat that certain types of piping material susceptible to leaking must be surveyed at least once every three years.<sup>6</sup> The federal code also requires an operator to repair all hazardous leaks “promptly”.<sup>7</sup> Kansas pipeline safety code augments the federal code by providing definitions of various categories of leak classification based on the leak characteristics and its potential threat to life and property.<sup>8</sup> Kansas regulations also establish requirements for response times in which the operator is to determine the classification of each discovered leak, and it establishes deadlines for repairing each class of leak.<sup>9</sup> The process of “classifying” a leak determines the areal extent of the leak and its potential threat to life and property. Additionally, Kansas regulations require leak surveys to be more frequent than federal requirements based on the type of piping material being surveyed and its propensity to leak.<sup>10</sup>

### **ANALYSIS:**

Based on a frequency schedule established by the operator, a typical leak survey proceeds in a sequential fashion. That is, a section of pipe is surveyed until the survey method indicates a leak is present. At that time, the surveyor or a second crew will determine the outer boundaries of the leak, classify it based on the regulatory criteria, and schedule repairs as applicable. It has been the practice of Kansas operators that the leak survey only continue if sufficient crews are available to respond to any leaks that are found. In part, this practice is based on the Kansas requirement to inspect and classify all reports of gas leaks within two hours of notification.<sup>11</sup> For example, if the leak surveyor continued while the only available crew was working to classify a previously determined leak, there is a possibility that any additional leaks could not be classified within the two hour time limit.

Using the Picarro surveying methodology, an eight-hour survey conceivably can cover a segment of distribution infrastructure that would take perhaps a week or more using traditional walking surveys. Under this scenario, a Picarro survey may determine multiple indications of leaks that must be scheduled for analysis. On the other hand, Staff notes the leaks indicated during the eight-hour survey would take several more days to discover if a walking survey was being conducted for the same area.

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<sup>5</sup> See K.A.R. 82-11-1 through 82-11-10.

<sup>6</sup> 49 C.F.R. § 192.723(b).

<sup>7</sup> 49 C.F.R. § 192.703(c).

<sup>8</sup> K.A.R. 82-11-4(b)(32)(c).

<sup>9</sup> K.A.R. 82-11-4(b)(32)(d).

<sup>10</sup> K.A.R. 82-11-4(b)(34)(c).

<sup>11</sup> K.A.R. 82-11-4(b)(32)(d).

Kansas regulations require an operator to use a leak survey technology that has been approved by KCC Staff.<sup>12</sup> In our view, the Picarro surveying methodology presents four challenges to the pipeline safety regulatory status quo with respect to leak evaluation. Those are:

1. **Picarro’s Accuracy.** The Commission should consider whether the proposed surveying methodology (which relies on a computer algorithm to triangulate the location of a suspected leak that may be several hundred feet away from the sensing device) is at least as accurate as a leak survey tool that is sensing from three feet directly above the pipeline.
2. **Implementing Procedures.** Each operator must develop a procedure that identifies a leak investigation prioritization scheme that incorporates the Picarro methodology leak probability indications with the potential consequences to life and safety from a leak at that location on the operator’s pipeline. The procedure should address response times as part of the prioritization.
3. **Determining Start of Two-Hour Requirement.** With respect to investigating a leak indication identified by the Picarro survey methodology, the Commission should consider allowing the two-hour leak classification interval mandated by K.A.R. 82-11-4(b)(32)(d) to begin when the operator’s personnel arrive at the site to begin determining the classification of the potential leak. In Staff’s opinion, the benefits from conducting more frequent surveys outweighs the risk that may be implied by not responding to every leak within two hours of receiving an indication that a leak may be present at a given location; and
4. **Reaffirming Two-Hour Requirement.** The Commission’s longstanding requirement to investigate all leaks within two hours of notification should be reaffirmed for all leak indications other than those received through a Picarro survey methodology. This Kansas regulation has proven effective over the years in providing prompt and effective response to a potential emergency related to natural gas.

Staff believes opening a Miscellaneous Investigation into this matter will allow the Commission to receive feedback from jurisdictional natural gas operators and interested parties regarding these four challenges and the appropriateness of a guidance document. Jurisdictional entities and interested parties’ feedback will assist Staff in crafting guidance regarding the appropriateness of using this technology to meet pipeline safety leak survey and leak response regulatory requirements.

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<sup>12</sup> See K.A.R. 82-11-1(m) (“‘Leak detection equipment’ means a device, including a flame ionization unit, combustible gas indicator, and other equipment *as approved by the gas pipeline safety section*, that measures the amount of hydrocarbon gas in an ambient air sample.” (emphasis added)).

**RECOMMENDATION:**

Staff acknowledges that each of the above listed challenges and opinions may have unintended consequences for any given operator's leak survey program. Additionally, we agree that KGS's request for Commission guidance will provide the operator with a measure of certainty before making a significant change to their leak survey program. Therefore, we recommend the Commission open a Miscellaneous Investigation into this matter requiring all jurisdictional entities and permitting interested parties to address the four challenges described above; any other potential challenges; and the appropriateness of a guidance document. Staff requests the Commission establish a procedural schedule. Staff recommends the procedural schedule provide 30 days for the entry of appearances and written comments; 30 days for reply comments; and 30 days for Staff's Report and Recommendation following reply comments. These efforts will assist Staff in drafting a proposed guidance document to be approved by the Commission pursuant to K.S.A. 77-438.

**TABLE 1**  
**Leak Survey and Leak Investigation Requirements**  
**Comparing Federal Pipeline Safety Code to Kansas Pipeline Safety Regulations**

| 49 CFR Part 192  | K.A.R. 82-11-4(b)  |
|--|--|
| <p>192.703: Each segment of pipeline that becomes unsafe must be replaced, repaired, or removed from service; Hazardous leaks must be repaired promptly.</p>   | <p>(32): Each segment of pipeline that becomes unsafe shall be replaced, repaired or removed from service within five days of the operator being notified of the existence of the unsafe condition.</p> <p>Each operator shall inspect and classify all reports of gas leaks within two hours of notification.</p> <p>Minimum requirements for response to each class of leak are as follows:</p> <ul style="list-style-type: none"> <li>• Class 1: Immediate repair or continuous action until the conditions are no longer hazardous; repaired within 5 days;</li> <li>• Class 2: repaired within 6 months of detection; monitored weekly under frozen soil to ensure nonhazardous</li> <li>• Class 3: Rechecked every six months; repaired within 30 months.</li> </ul> |
| <p>192.723: Leakage survey with leak detector equipment must be conducted as frequently as necessary but at least once per calendar year in business districts and at least once every 5 years outside business districts. For unprotected steel lines, survey intervals may not exceed 3 years.</p> | <p>(34): Incorporates federal requirements. Additions for outside business districts:</p> <ul style="list-style-type: none"> <li>• In urban areas, unprotected steel, PVC, or copper mains, service lines, and customer piping to be surveyed annually.</li> <li>• In rural areas, unprotected steel, PVC and copper service lines, and customer piping surveyed annually.</li> <li>• In rural areas, unprotected steel, PVC mains surveyed once every 3 years.</li> <li>• Protected steel and polyethylene mains, services, and customer piping surveyed once every 5 years.</li> </ul>   |



**Kansas  
Gas Service®**

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December 14, 2021

Ms. Terri Pemberton, Chief Litigation Counsel

Kansas Corporation Commission

1500 SW Arrowhead Rd.

Topeka, KS 66604

Ms. Pemberton:

On behalf of Kansas Gas Service, a Division of ONE Gas, Inc. ("Kansas Gas Service" or "Company"), I am writing to request the Kansas Corporation Commission ("Commission"), pursuant to K.S.A. 77-438, issue a guidance document on the interpretation of K.A.R. 82-11-4(b)(32)(d).

In September 2021, Kansas Gas Service personnel and the Commission's Chief Engineer Leo Haynos met to discuss the deployment of Picarro. Picarro is an advanced methane detection unit that can be mounted on a vehicle and assist with the Company's leak detection efforts. After making a series of passes in an area, Picarro and advanced software analyzes captured air samples. Picarro can help the Company perform leak surveys over large areas more quickly than traditional means. However, Picarro's sampling techniques and analysis must be completed before the Company can review any subsequent reports. While these reports aid the Company in investigating potential leaks, the Company is not able to begin reviewing Picarro's identified areas until the report has been generated.

K.A.R. 82-11-4(b)(32)(d) requires Kansas Gas Service to "inspect and classify all reports of gas leaks within two hours of notification." During the meeting with Mr. Haynos, it was determined the Picarro-generated report was not a report or notification. Rather, the two-hour inspection window would begin once Company personnel arrived on site at a Picarro-identified area. To ensure Kansas Gas Service operates consistently with the Commission and its Staff's interpretation of K.A.R. 82-11-4(b)(32)(d), Kansas Gas Service respectfully requests the Commission issue a guidance document on the use of Picarro. Specifically, Kansas Gas Service requests the Commission issue the following guidance:

An operator may utilize advanced technologies to perform leak surveys. Reports generated by such advanced technologies shall not be considered a report or notification under K.A.R. 82-11-4(b)(32)(d). An operator's investigation of an area identified using advanced technologies, and the operator's requirement to inspect and classify all reports of gas leaks within two hours of notification, will not commence until an operator arrives on the subject site.

If you have any questions please do not hesitate to contact me.

Respectfully,

**/s/ Robert Elliott Vincent**

Robert Elliott Vincent, Managing Attorney

cc: Lynn M. Retz, Executive Director

Brian G. Fedotin, General Counsel

## **CERTIFICATE OF SERVICE**

I, the undersigned, certify that a true copy of the attached petition has been served to the following by means of electronic mail on February 17, 2022:

Lynn Retz  
Executive Director  
Kansas Corporation Commission  
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/s/Abigail Emery